Electricity on the Farm

A Monthly Magazine for the Progressive Rural Family

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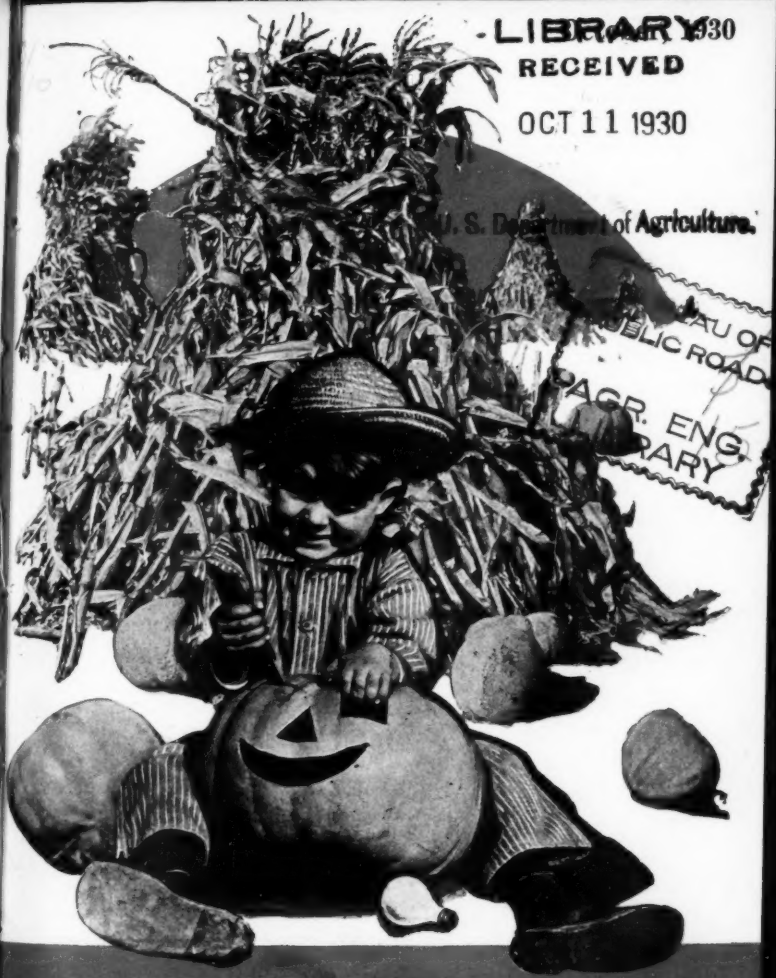
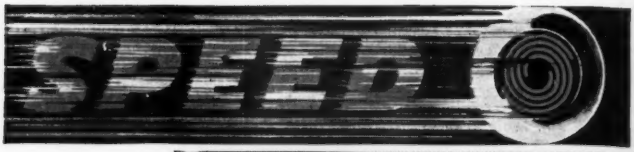


This Edition Includes a

MERCHANDISING SUPPLEMENT

For Equipment Dealers and Power Company Representatives



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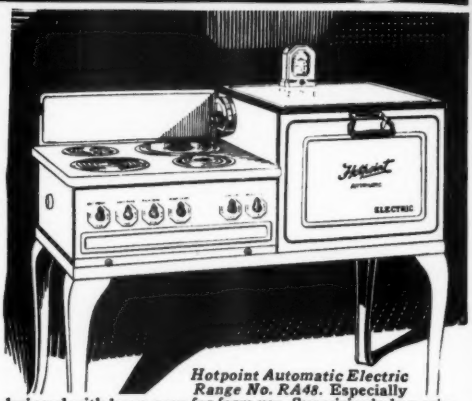

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Electricity on the Farm

Vol. 3 OCTOBER, 1930 No. 10

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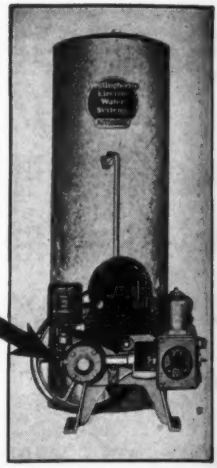

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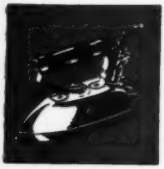
MOTHER SEWS A NEW DRESS
. . . while electricity cooks supper



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Send for the new booklet "Electric Helpers for the Farm." Address Room 317, Building 6, General Electric Company, Schenectady, N. Y.

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Electricity on the Farm

Vol. 3 OCTOBER, 1930 No. 10

Lights Drive Away the Gloom

AS the days grow shorter and the evenings longer the benefits of electric lighting on the farm can be better appreciated.

A properly lighted farm dwelling eliminates the gloom which drives many of the young folks to cities and towns. It makes the housework a pleasure rather than a drudge. It results in a happier household and, of equal importance, a cleaner one.

The benefits of light extend to the farm buildings as well. After-hour jobs such as repairing machinery, getting equipment into shape for use on subsequent days, repairing harness, and similar tasks are really recreation if good lighting is provided, and electrically operated equipment is available. It is a most disagreeable task to have to do repair work, greasing farm machinery, or other similar jobs, by the light of a lantern. Contrast this method with doing similar tasks in a well lighted work shop and with extension cords for placing a light right at the spot it is needed.

It was early recognized in industry that better lighting produced better work, more of it, and more contented workmen. The modern farm operator is finding that the same conditions apply to the farm, particularly after dusk. Many farm hands, or farmers, who have a mechanical inclination enjoy an evening in the workshop, but these same men could not be induced to work around with a lantern unless real necessity demanded it.

No wonder those farmers having properly electrified farms are so enthusiastic about the benefits of electric current.

Modern Methods at Marymoor Include

Music for Cows

By J. C. Scott

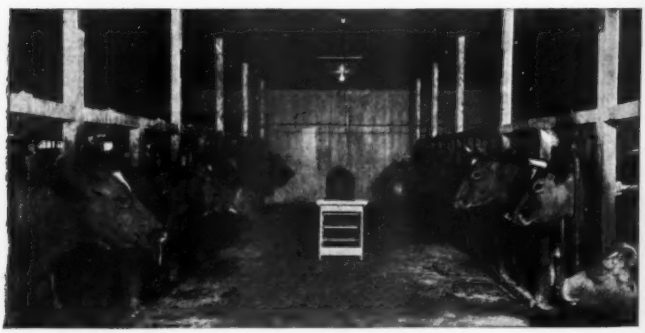
DO cows like bed time stories? Sounds rather silly, I'll admit, but let us see what Dodd Brothers proprietors of Marymoor Dairy at Kirkland, Wash. think about it. The use of the radio to comfort and quiet the cows at milking time is indicative of the thoroughness and thoughtfulness which these dairymen exercise, to put out a better product.

"We notice," commented Mr. Ralph Dodd, "that the cows like the soft music of the radio. It quiets them; they become less nervous, and with most of the heavy producers, the milk will begin to drop from their teats soon after the radio starts."

Six years ago, Ralph, Lloyd and Dean Dodd started in the dairy business with three Guernsey cows, belonging to W. B. Nettleton. They now have fifty-five head of cattle, thirty of them now producing certified milk. Getting 18 cents to 20 cents per quart for two hundred and seventy-five to three hundred quarts of milk a day, as Dodd Brothers do, demands a quality milk, produced economically and with the least labor, and the right electrical equipment.

Clean Barn Essential

Having a clean, washed barn to milk in is only one precaution in keeping the dust out of the milk at Marymoor. Before milking, the udders are washed and then the cows are curried with an animal groomer, which works on the same principle as the household vacuum cleaner. An electric milking machine is also used. The milk is not exposed to the air in this operation, as it goes from the cow's teats through the teat cups and through



Bed Time Stories for Bossy

Soft, melodious music has a very soothing effect upon the nerves of a cow. The camera has made the cows in the immediate foreground of this picture a little nervous, but notice the sleepy, contented appearance of those in the background.

a rubber hose to an enclosed container. And pure milk is not the only advantage in using the milking machine.

"We figure," explains Mr. Dodd, "that the milking machine operated by a ¼ horsepower electric motor saves us five man-hours a day over our old method of milking by hand. And it doesn't tire us out so much to do the milking by machine either."

After milking, the warm milk is taken to the electric milk cooler where its temperature is reduced immediately to about 40 degrees, which checks the growth of any bacteria which may have gotten into it. Then the milk is stored in the 5 ft. x 6 ft. x 8 ft. refrigeration box, where it is kept cold until taken out for delivery. The electric refrigeration plant is also equipped for manufacturing ice, so when the bottled milk is placed in the delivery truck, the bottles are packed in ice. Flies are kept out of the milk house by insect electrocutor screens.

To keep the bacteria count low in milk, authorities tell us that clean sterilized utensils are of utmost importance. At Marymoor, a 30-gallon water tank with a 750-watt electric heater is well insulated to save heat and the insulation is covered with sheet metal so it can be easily washed. This outfit furnishes plenty of hot water at any time of day or night for washing all utensils. After the utensils are washed, they are placed in an electric sterilizer for thorough sterilization.

Steam Pressure Too

But even with the hot water tank and the sterilizer, Dodd Brothers decided on still further precautions, to be sure no microbes or bacteria could thrive in the milk house, and so figured they needed live steam under high pressure. They wanted a steam pressure boiler to be heated by electricity or nothing at all. A suitable electric steam boiler could not be found on the market, so the Farm Electrification Service Dept. of the Puget Sound Power & Light Company, co-operating with a local manufacturer, developed a new electric steam boiler, which is giving absolute satisfaction.

The Utility Cleaner, which is nothing but a specially arranged vacuum cleaner, is used on the Marymoor Farm as an animal groomer.

"We have used every kind of a water heater and dairy sterilizer on the market," said Mr. Lloyd Dodd recently, "but this electrical equipment is by far more satisfactory in every way than anything we ever had anything to do with for wash-

Here are the steam pressure boiler, hot water tank and sterilizer which employ electricity on the Marymoor Farm.

ing and sterilizing dairy utensils." Such apparatus with reliable electric service is essential for the economical production of certified milk containing only one thousand to four thousand bacteria per cubic centimeter.

Market for Cheese

There are times when the sale of high priced market cream leaves the Marymoor Farm with a surplus of skim milk. For this skim milk, made into cottage cheese, they had a market, but were short of time. The problem was to heat 50 gallons of skim milk to a temperature of 70 degrees F and hold it at that temperature automatically for about 12 hours, depending on the condition of the curd. When ready, the curd must be cut, the whey drained off, and the temperature of the cheese immediately raised to 140 degrees F. and kept there automatically for about a half an hour, or until the right solidity is obtained.

The Problem Solved Successfully

As in the case of the electric steam boiler, this problem has been successfully worked out, and Marymoor has probably the first electric automatic cheese machine ever made. And it does the work too. According to Dodd Brothers: "It is easy to make good cottage cheese with the electric machine because it controls the temperature so well. We could well afford to pay $75.00 a month for all our electric service. But our monthly bill is only about $30.00."

Barley Found in Buried City

Samples of grain found during the Field Museum-Oxford University expedition to Mesopotamia in 1928, in the ruins of the buried city of Kish, "the first city founded after the Flood," have been declared by five experts of the United States Department of Agriculture to be barley. Three jars of grain were found in two ancient buildings that had been buried for thousands of years below the original surface of the mounds covering eastern Kish. One building was in a stratum just above the level where traces of a flood were discovered, which, according to archaeological evidence, occurred about 3200 B. C. The grain is now practically pure charcoal.

The electric milking machine saves 5 man-hours a day in milking the thirty head of Guernseys.

Carl Block Finds it Pays to

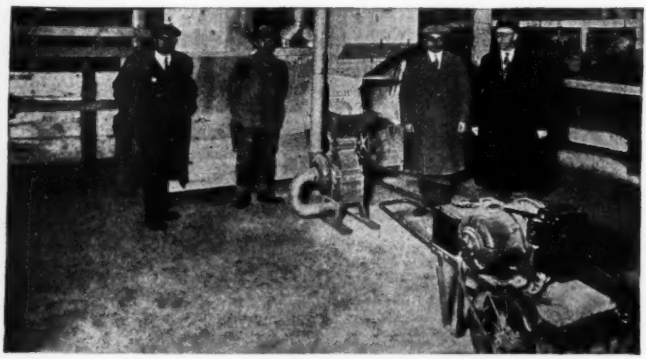
Grind Feed at Home

By Clive C. Bell

FEED grinding by the use of electricity has been found to be economical in time and expense. A demonstration on the farm of Carl Block, Wausau, Wis., conducted by the county agent, W. J. Rogan, in co-operation with Clive C. Bell, in charge of rural electrification for the Wisconsin Valley Electric Company, brought out a number of very interesting facts.

Hopper Construction

Mr. Block with the help of Mr. Bell had constructed a hopper four and a half feet high, two and a quarter feet long, and nineteen inches wide. This hopper held about eighteen bushels of grain. A trap door was conveniently placed in the second floor directly over the hopper. Feed to be ground was taken from the granary on the second floor and dumped into this hopper. A hammer mill with blower and dust collector was then placed below the hopper so that the feed could run into the opening afforded for the feed to be ground by the hammer mill. Two other bins were constructed a few feet back of the hopper bin and the blower with dust collector was installed so that the ground grain could be blown into these two bins. These bins are about three feet square and four feet high. The ground grains can be blown with the guidance of a damper into either one bin or the other. A bin for commercial feeds was constructed along the sides of these other two bins. This bin is eight feet, three inches high, two feet, eight



Everything in Readiness to Carry Out the Demonstration

inches wide, and three feet long. It will hold a ton of commercial feed. A trap door arrangement had been built in the second floor of the barn so that feed can be dumped right into this hopper or bin and after being mixed with the home-ground grains, fed to the cows on the basement floor.

Time and Power Checkup Made

At the demonstration, the number of kilowatts used were recorded with a recording watt meter, the exact time was checked with a stop watch and the cost exactly ascertained.

For 100 pounds of oats, it took sixteen minutes and forty-seven seconds and used one and two-tenths kilowatt hours at a cost of $.036. For grinding one hundred pounds of corn, it took seven minutes and forty-nine seconds and six-tenths of a kilowatt hour at a cost of $.018. One hundred pounds of barley took thirteen minutes and two seconds and one and two-tenths kilowatt hours of energy costing $.036. All of the grinding was done over a 1-8-inch screen with a 5 h.p. electric motor. Mr. Block considers it much more convenient, and produces a big saving, for him to grind his feed at home.

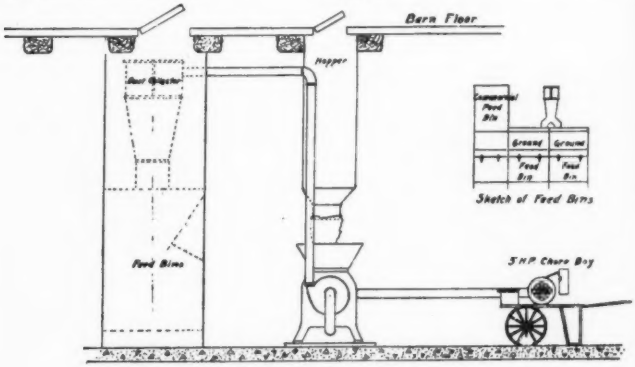
Ground Alfalfa for Hatchable Eggs

GREEN feed and direct sunlight or cod liver oil are both necessary to produce a maximum percentage of hatchable eggs according to recent tests at the Ohio Experiment Statjon. Direct sunlight or the feeding of cod liver oil has little benefit unless a green feed is available at the same time and according to D. C. Kennard, in charge of poultry investigations, a high quality alfalfa meal used as a part of the mash makes a very satisfactory solution of the green feed problem. He also finds that milk in some form serves very effectively as a partial substitute for green feed, and for this reason makes an important part of the ration for layers kept in confinement.

The greater use of feed mills and increasing acreage of alfalfa makes possible a widespread use of this choice feed the quality of which is assured when ground on the home farm.

Thoughtful of Nature

Scientists have found a prehistoric animal with joints that worked both ways. Probably one of nature's efforts to produce a creature that could get into a suit of underwear in an upper berth.


Barn Floor
Hopper
Dust Collector
Feed Bins
Commercial Feed Bin
Ground
Feed Bin
Ground
Feed Bin
Sketch of Feed Bins
5 H.P. Chore Boy
Size of Bins
2 Ground Feed bins, 3 Ft. deep, 3 Ft. 2 in. wide, 4 Ft. 3 in. high.
Commercial Feed Bin, 3 Ft. deep, 3 Ft. 2 in. wide 8 Ft. 3 in. high
Hopper 19 in deep, 2 Ft. 3 in. wide, 4 Ft. 6 in. high.

Cross Sectional View of Bins and Equipment

One of the Electric Lighted Laying Houses

Making a Business of a Hobby

By E. R. Meacham

ORDINARILY farming is an hereditary occupation, but now and again a town man turns back to the farm for his life work. Duane Peck did. Ten years ago he was the assistant cashier in the Bank of Baraboo; today he runs a thriving poultry farm west of town.

It came about through a hobby of his.

Banking hours gave him time for a flock of chickens out in his back yard. At first he raised eggs only for family use; then he began to supply some of the neighbors too. Finally he got to shipping eggs to private customers in Chicago.

"I'd always kind of liked it in the country," Mr. Peck told me. "I have a couple of uncles who live on farms, and I used to enjoy going out to see them. So when father came over one day and said if I wanted to raise chickens I'd better do it on a farm, I thought it would be a good idea to try it."

That is how it all began.

At first Mr. Peck thought he had to carry on general diversified farming as an excuse for his chickens, but after a few years the chickens crowded the rest out. He now rents the rest of the farm on shares and devotes himself exclusively to the poultry.

His business primarily is winter eggs.

Increasing Flock

Last year he had 1200 layers. This year he will be having 2000. The day I was there, along toward the last of August, he had just shut the pullets up in the long laying houses. These houses are heated with hot water, lighted with electricity, and piped for running water in every room.

"Those pullets," said Mr. Peck, "will probably never be out doors again. That's what cod liver oil does. I have had hens that waren't out doors for three years. We'll have lights in the houses a while every day from now until the first of May. To begin with it will be from seven to about eight-thirty in

Electric ventilation and heat control are important in Mr. Peck's big incubator.

the evening. When the days get shorter, we will turn them on at six o'clock in the morning, too. We have a clock that does that for us in one of the houses, but we need a couple more."

In those warm houses, with the long hours of lighted day for eating and drinking, the hens do a good job of egg production.

"We get more eggs from now till the first of February than we do in the rest of the year," said Mr. Peck. "We run as high as 75% production. If we put those pullets in now, at the last of August, they will be in production in October. What if they do moult in February? They have given us eggs when prices are best."

Keep Best Stock

The Pecks do not sell off the flock each spring and start in with a new bunch of pullets in the fall. They go through the flock two or three times each year and keep the best. This fall they are beginning to trap nest the birds.

Most of the eggs are sold in Chicago. Mr. Peck ships three times a week; about half of the eggs go to private customers and half to commission houses.

"We have shipped to one man for twelve years. He was my first customer, and we still sell him six or twelve dozen eggs a week. At one time we shipped to one of his brothers and two of his sisters. I'm not sure whether we do now or not; my wife looks after the bookkeeping."

Chick Business

Another part of the business is the production of baby chicks. Last spring he hatched about 80,000.

The main heat for his large incubator is supplied by hot water, but the incubator has an auxiliary electric heating unit that takes care of any sudden fluctuation in temperature. When cold eggs are put in, the electricity goes on and stays on till the temperature comes up.

Practically all of the baby chicks are sold right there at the farm.

The chicks that he keeps, and that was about 10,000 last spring, he broods for the first ten days in battery brooders. He has four of these, all electrically heated.

"If we can control what chicks eat for the first week, they are pretty well started," say Mr. Peck. "We have so many that I take them out of the battery brooders after ten days and put them under small electric brooders where they will not be crowded. We have ten or a dozen small electric brooders, and we keep them going from late in February to the middle of July. Hatching begins about the middle of February."

While Mr. Peck is hatching chicks and raising pullets for winter eggs, he can't entirely avoid being in the meat business, too.

Baraboo is in summer resort country. Devil's Lake lies three short miles to the south; Kilbourn and the Dells of the Wisconsin are a little to the north. Tourists mean good business for the chicken man.

Last year Mr. Peck furnished one hotel 10,000 cockerels.

"I have found that a good part of my job is marketing," said Mr. Peck. "It doesn't do any good to produce something if you can't sell it. Now this hotel man tells me in the spring about how many he will need and forgets all about it.

I deliver the chickens to him regularly.

"He must have 2500 in his ice box right now. He keeps them frozen until he needs them. You see, they have to go to him when they are just right. He might call up and want a hundred chickens. I couldn't always give him just the right size. They can't be too small, or the customer will be dissatisfied; they can't be too large, either, or they will be wasted. I might not be able to get a hundred ready in time. So we take them to him when they are right, and he freezes them in a block of ice."

"But I thought you only had 10,000 chicks yourself," I said bewildered.

"I buy the rest from my neighbors," said Mr. Peck. "When I sell them the chicks, I tell them that I'll buy the cockerels when they get to be about two pounds. Then I take the orders and fill them. I find that the time saved in my business transactions is just as important as short cuts in taking care of the flock, and I need it when we are killing and picking chickens. We have to scald pick them pretty carefully, because broilers for freezing should not have the skin broken."

Records of the feed they buy and the chickens and eggs they sell help the Pecks to plan their business effectively. They persist in looking upon cockerels as a side line, with winter eggs and baby chicks the most profitable part of the business. But the volume of the broiler trade makes it a pleasingly profitable feature. There are five children in the Peck family, and all but the littlest help with the business of getting chickens ready for market.

Depend On Current

"This business puts a heavy dependence on electric current," I suggested.

"Yes," said Mr. Peck. "We came out to the farm in March. The line went through in September. We wouldn't have come here at all if we hadn't known that line was going through. Electricity simplifies the business of raising chickens a lot.

"Of course we brought out an iron and a washing machine from town. Then we got a pump jack, and later a deep well pump and a water system that carries water to pretty nearly all the buildings on the farm. Since then it's been one thing or another for the house right along. But won't you come in and see what we have?"

An Electrified Home

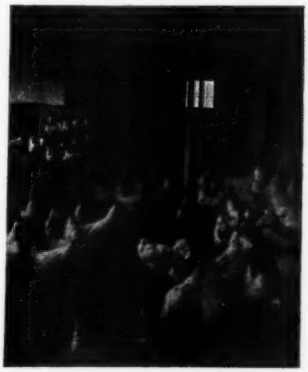
We went up a couple of steps to a broad screened porch. There, right by the kitchen door, was an imaculate white refrigerator. Inside the kitchen was a pale green range; under the sink was an electric water heater.

"Until we came out here, my wife had never even spent a night on a farm," said Mr. Peck, with a smile.

"I do not see that she left any of the conveniences behind," I replied. "But do you find them as economical out here?"

"That's what we wondered when we put in the electric range and the water heater, so we asked the power company to put a meter on those two appliances. The readings for the first eight months of this year show that the current for our hot water and all our cooking for a family of seven costs less than

(*Continued on page 26*)



Part of the flock whose eggs go to special customers in Chicago.

Exterior View of the Lackey Dairy, Birmingham, Ala.

Dairy Refrigeration

in the Southeast

E. C. Easter

TO produce milk of good quality it must be properly cooled immediately after production, and maintained at a temperature not higher than 50°F. to prevent a very rapid multiplication of bacteria. Electricity is well adapted to the operation of refrigerating equipment for the dairy, because it lends itself very well to automatic control, and requires but little care or attention. In Alabama about 100 dairymen are using electrically operated refrigerating equipment at a great saving of cost and increased efficiency in cooling and storing the milk products.

The dairyman who is installing refrigerating equipment should be sure that he is getting equipment with sufficient capacity to take care of his needs at present and for future expansion, if any is probable. Overloading equipment lowers its operating efficiency, makes it wear out more quickly and increases the cost of refrigeration. In our experience we have seen many dairymen install equipment entirely too small to do the required work, resulting in having the machine operate continuously twenty-four

TABLE I

Refrigeration Required at Retail Dairies in Southeast

To cool one gallon of milk from 95°F. to 40°F.	3.5 lbs. of refrigeration
To cool bottles or cans for one gallon milk from 85°F. to 40°F.	1.5 lbs. of refrigeration
Two pounds of ice to crack over milk en route to market	3.2 lbs. of refrigeration
To provide cold storage and allow for losses, drinking water, etc.	2.0 lbs. of refrigeration
Total Refrigeration Needed per Gallon of Milk	10.2 lbs. of refrigeration

Note: One pound of refrigeration is equivalent to the "cold produced" by the melting of one pound of ice.

hours per day during the summer months, and even then not producing sufficient refrigeration to meet the dairyman's needs. Equipment should have sufficient capacity to properly take care of the refrigerating requirements at the dairy without operating more than eighteen hours per day during the summer months.

The amount of refrigeration needed at the dairy varies very widely with how the milk is marketed. The dairyman who delivers milk in bottles to retail customers needs refrigeration to cool all of the milk produced, to cool the bottles, to provide cold storage for the milk produced at the evening milking, and to provide cold drinking water for the labor at the dairy. Allowances must also be made for losses of refrigeration through the transfer of heat through the walls, through opening the doors, etc. Too, the retail dairymen, in many instances, are required to crack ice over the crated bottles of milk en route to market. This usually requires about two pounds of ice per gallon of milk delivered.

Then the total amount of refrigeration needed at retail dairies of the Southeast is approximately as shown in Table 1.

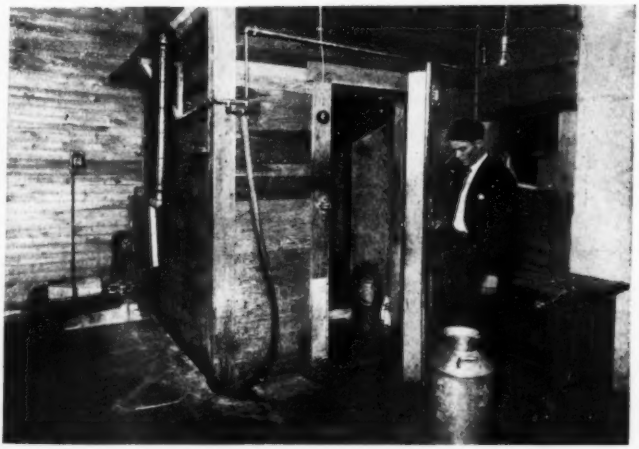
Refrigerating machines are rated in tons of refrigeration per twenty-four hours of operation, in pounds of "ice melting capacity" per day, or in British Thermal Units (B. T. U.) output per hour.

Table 2 on page 20 is an index of the minimum capacity machine for different size retail dairies.

Operating Costs Vary

Inasmuch as the rates for electricity vary in different localities and with the amount of electricity used, it is practically impossible to include an item of cost that would apply to different individual conditions. However, at 4 cents per KWH, the average cost of electricity for operating the refrigerating equipment at the eleven dairies would amount to 30 cents per month for each gallon of milk produced per day, or about 1 cent per gallon of milk cooled.

Prior to the installation of the mechanical refrigerating equipment, the eleven retail dairies were using an average of six pounds of ice per gallon of milk cooled, at an average cost of 40 cents per



An Electric Storage Refrigerator on the Lackey Farm

hundred pounds. On this basis the average cost of ice per gallon of milk cooled was 2.4 cents and the average cost per month for each gallon of milk produced per day amounted to 72 cents.

However, to make a complete comparison of the costs, the interest on the investment and depreciation of equipment should be included. Where ice is used there is interest and a depreciation of the box or room; with electrically operated equipment there is the interest and depreciation of the entire equipment.

On the basis of 16% annual interest and depreciation on refrigerating equipment, and if a dairyman producing 100 gallons of milk per day pays $2,400 for refrigerating equipment, the interest and depreciation would amount to 1.07 cents per gallon of milk. If using ice, with an investment in box and cooler of $400, the in-

TABLE II

Minimum Capacity of Refrigerating Machine

Gallons of Milk per Day	In Tons per Day	In Lbs. Refrigeration per day	In B.T.U. Output per Hour
15	⅛	250	1,500
30	¼	500	3,000
45	⅜	750	4,500
60	½	1,000	6,000
90	¾	1,500	9,000
120	1	2,000	12,000
150	1¼	2,500	15,000
180	1½	3,000	18,000
210	1¾	3,500	21,000
240	2	4,000	24,000
300	2½	5,000	27,000
360	3	6,000	36,000

TABLE III

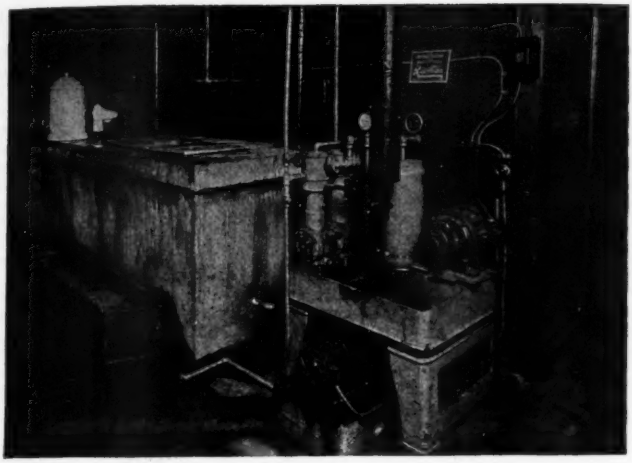
Record of the Average Amount of Electricity Required to Operate Refrigerating Equipment at Eleven Retail Dairies in Alabama for a Period of Twelve Months

Month	Kilowatt-hours per Month for Each Gallon of Milk Per Day	Kilowatt-hours per 100 Gallons of Milk Cooled
January	5.0	16.7
February	5.4	18.0
March	5.3	17.7
April	8.3	27.6
May	7.9	26.4
June	8.9	29.6
July	10.8	36.0
August	9.8	32.6
September	10.0	33.3
October	7.8	26.0
November	7.3	24.4
December	5.9	19.6
Average	7.6	25.3

TABLE IV

Capacity of Refrigeration Plant Needed at Wholesale Dairies

Gallons of Milk Produced per day	Minimum Capacity of Refrigerating Machine In Tons per Day	In Pounds Refrigeration per Day	In B.T.U. Output per Hour
15	..	150	900
30	..	300	1,800
50	¼	500	3,000
75	⅜	750	4,500
100	½	1,000	6,000
150	¾	1,500	9,000
200	1	2,000	12,000
300	1½	3,000	18,000



Cooling Cabinet and Refrigeration Equipment

terest and depreciation at 16% annually would amount to 0.18 cents per gallon of milk. Then, the total cost of electrically operated equipment on the above basis would be 2.07 cents per gallon of milk, or $62.10 per month. The total cost of ice refrigeration would be 2.58 cents per gallon of milk, or $77.40 per month.

Refrigeration for Wholesale Dairies

The dairyman who delivers milk in wholesale quantities, either to a milk plant or to large customers, needs much less refrigeration than the retail dairyman, due primarily to the fact that no ice is needed to crack over the milk en route to market and usually there is less storage space needed. However, it is equally important that sufficient capacity of equipment is installed.

The installations at wholesale dairies usually consist of either wet or dry storage in a box, rather than in a cold storage room. In case of wet-storage installations, the expansion or cooling coils are installed in a box in which there is water. The operation of the machine cools the water and the milk is cooled by circulating the cooled water through an aerator over which the milk is poured. After cooling, the cans of milk are set in the water for storage.

In dry-storage installations, storage compartments were usually provided on one or both sides of a brine tank in one combined box. The operation of these installations was the same as for wet storage, except that the cans were set in dry storage. The dry-storage type plants are only slightly more expensive to install, but are more satisfactory to the dairymen and are no more expensive to operate.

The average amount of electricity used for refrigeration at three wholesale dairies, that were cooling all of the milk to about 40°F. and storing the night's milk, was 4.6 KWH per month for each gallon of milk cooled per day, or an average of 15.3 kilowatt-hours for each 100 gallons of milk cooled.

At 4 cents per kilowatt-hour, the average cost of electricity for operating refrigerating equipment at the wholesale dairies would have amounted to 18.4 cents per month for each gallon of milk cooled per day, or an average of 61 cents for each 100 gallons of milk cooled. However, the rates for electricity

vary, and to determine the cost for an individual dairy it is necessary to consider the rate applicable and the amount of electricity used.

The three dairies, prior to the installation of the refrigerating equipment, were using an average of 4 pounds of ice per day for each gallon of milk cooled. The total ice per month amounted to an average of 120 pounds for each gallon of milk cooled per day. At 40 cents per 100 pounds, the cost of the ice was 1.6 cents per gallon of milk cooled, or about 48 cents per month for each gallon of milk produced per day.

Conclusions

1. Retail dairies, for complete refrigeration, should have a plant with a minimum capacity of 15 pounds "ice melting capacity" per twenty-four hours operation for each gallon of milk produced per day.

2. Wholesale dairies, for complete refrigeration, should have a plant with a minimum capacity of 10 pounds "ice melting capacity" per twenty-four hours operation for each gallon of milk produced per day.

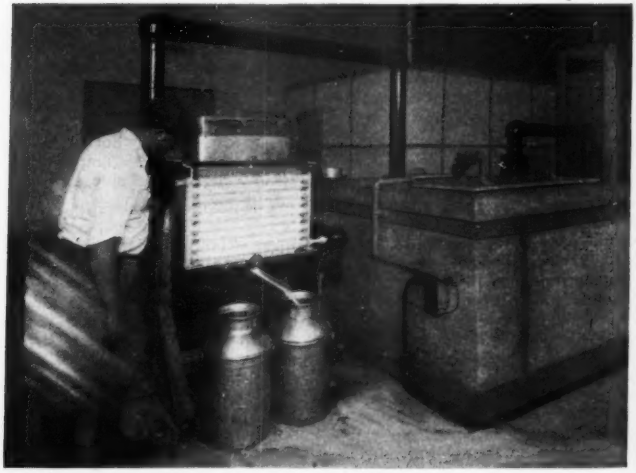
3. By circulating fresh water through the upper sections of the tubular cooler, the minimum capacity of refrigerating equipment for retail dairies can be reduced to 12½ pounds "ice melting capacity" per twenty-four hours operation for each gallon of milk produced per day; and for wholesale dairies the minimum capacity can be reduced to 7.5 pounds "ice melting capacity" for each gallon of milk produced per day.

4. The dairyman should not attempt to install his refrigerating equipment unless he is an unusually good carpenter and mechanic, and even then the supervision of a refrigerating engineer is desirable.

A FINISHING TOUCH

In an out-of-the-way corner of a Boston graveyard stands a brown board showing the marks of age and neglect. It bears the inscription: "Sacred to the memory of Eben Harvey, who departed this life suddenly and unexpectedly by a cow kicking him on the 15th of September, 1853. Well done, thou good and faithful servant."

—De Laval Monthly.



Chilling of the milk and cream during the separation process made possible by refrigeration

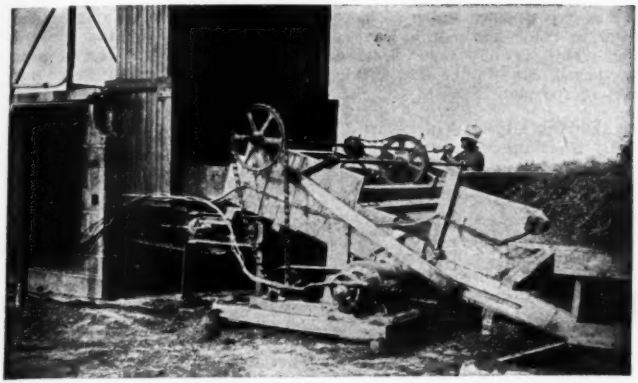


Fig. 1. Alfalfa Entering the Fulmer Dryer.

New Developments in Hay Dryers

By H. B. Josephson*

TRUCK-LOADS of green, cut alfalfa are dumped onto the feeding table of the Mason alfalfa dryer situated along the highway near New Castle, Delaware. Tourists gaze in wonder upon this novel agricultural machine and many stop to see the dryer in operation.

Mr. Arthur J. Mason, a retired mechanical engineer of Chicago, designed and built the first successful hay dryer at Flossmoor, Illinois, in 1925. Since then Mr. Mason has built at least four drying plants and organized the Mason Alfalfa Process Company. One of the Mason dryers has been operated several years by the Walker-Gordon Laboratory Company on their farm near Plainsboro, New Jersey, and has dried as much as 1,000 tons of alfafa in one year.

*Associate Professor of Agricultural Engineering, Pennsylvania State College.

Coal is the source of heat in the Mason process and electric motors are used to drive a blower fan, a grinder and other mechanism of the dryer. The process consists in passing heated air together with the hot gases from a furnace through a carefully formed "mattress" of the hay. The hay is carried on an endless conveyor through a closed tunnel about 150 feet in length. A large fan drives the heated air into this tunnel where it passes through the hay, carrying with it the moisture from the green plants.

The Mason hay dryer operates from June to October whenever there is hay to dry and the weather is fit for men to work outside. Lengthening the hay making season and removing the weather hazard ordinarily associated with hay making are among the advantages of the mechanical hay dryer.

About two tons of dried hay are produced each hour. The product differs from ordinary field-cured

hay as it is greener and more uniform in color and not a leaf is lost. This is important because the leaves are the most valuable part of the plant.

Dryers Differ Widely in Mechanical Principle

There are now about eighteen hay drying installations in the United States. A few of these are no longer in use, while others have been developed only within the past two or three years. These differ widely in mechanical principles.

In the early dryers, particularly those developed in Europe, heat was generally supplied indirectly to the hay. The drying air was heated by passing it over steam coils or over tubes containing the hot combustion gases while a stack was provided for the escape of the latter. It was thought that the hay would be damaged by bringing it in contact with the gases from the furnace. In nearly all the present dryers in this country the gases from the furnace are brought in direct contact with the hay being dried, whether the heat is supplied by coal, oil or natural gas. This tends to a much higher efficiency in the use of fuel.

The Fulmer dryer, shown in Fig. 1 and 2, built by Mr. J. H. Fulmer on his farm at Nazareth, Pennsylvania, is of the conveyor type similar to the Mason plant. The drying compartment or tunnel is of cinder concrete block construction in order to reduce heat losses. Fig. 1 shows the hay entering the dryer. The electric motor shown drives the ribbon-forming machine which insures a uniform thickness of material on the conveyor. The motor shown in Fig. 2 drives a hammer-mill which grinds the dried hay to a meal as it is discharged from the dryer. A third motor drives the conveyor chain, while the fourth motor drives a blower fan which delivers the heated air from the furnace to the drying chamber. The total power requirement of the plant is about 65 horsepower. It has produced over one ton of dried hay per hour with a fuel consumption of 700 pounds of low-grade coal per ton of dried hay.

Fig. 3 shows the Ardrier built and operated by C. D. Arnold of Galesville, Wisconsin. This is a rotary kiln dryer. The hay is first cut into short lengths with an ensilage cutter. It then enters the kiln at the furnace end. The kiln rotates slowly. A suction fan placed at the opposite end draws the light dry material from the kiln. The lighty leafy material remains in the dryer for only

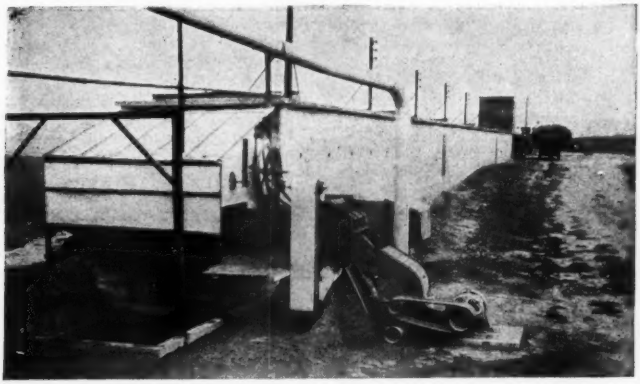


Fig. 2. The Fulmer Dryer Viewed from the Discharge End.

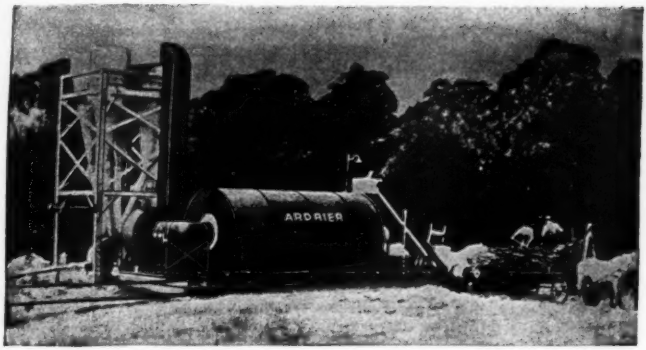


Fig. 3. The Ardrier Uses a Rotary Kiln and Suction Fan.

about thirty seconds, while the green heavy stems remain from two to four minutes. This dryer is claimed to turn out two tons of dried hay per hour with a fuel consumption of 200 pounds of coal or 15 gallons of oil per ton of dried product. Mr. Arnold is now building several portable machines which will burn oil.

The Koon Dryer Recently Developed

Another interesting dryer recently developed is the Koon dryer invented by Arthur W. Koon, a Louisiana farm operator. Two of these machines have been built and successfully operated; one on the Brook Hill farm at Genesee Depot, Wisconsin, and one on the farm of Mr. A. Montz at Laplace, Louisiana. The former installation produced 1,100 tons of dried hay during the past season. The Koon dryer, like the Ardrier, performs the drying operation in a very short time. The hay passes through the drying process in less than one minute. The green alfalfa is first run through an ensilage cutter. The smaller particles are then blown at a high speed through long pipes in contact with hot gases from a furnace.

Hay-making is one of the oldest arts of civilized man, but the process of natural curing is always done at the hazard of rain and storms. It is common knowledge that enormous quantities of hay are spoiled annually by weathering, but it remained for recent investigators to show how much of the nutritive value of hay may be lost through leaching and shedding of leaves. Herein lies one of the principal advantages of artificial curing. Because no weathering is permitted, the product has a feeding value and palatability nearly equal to that of the fresh green hay. By a suitable system of cropping the haying operations may be made continuous throughout the entire growing season. Although designed chiefly for the production of alfalfa and other high protein hays, the artificial curing is equally applicable to oats and corn. The cost per ton of product may be greatly reduced by lengthening the period of annual use and thereby distributing the depreciation cost upon a greater tonnage.

Operating Cost of Artificial Dryers

The cost of artificially drying alfalfa hay, including grinding, has been figured to be anywhere from $3.50 to $10 per ton. These figures include depreciation of the drying equipment. One reason for this large difference in cost is that in some cases several hours of dry-

ing in the field is permitted before the hay goes to the dryer. This reduces greatly the amount of fuel necessary for drying. It is claimed by some that in pre-drying there is a considerable loss of protein. This loss is probably due entirely to leaf shattering, as some investigators have concluded. The initial cost of the drying plant is another important factor in the cost of drying. Dryers have been built costing anywhere from $5,000 to 25,000.

There seems to be no doubt as to the practicability of the mechanical hay dryer in sections of high rainfall when the operation can be done on a large scale. The question in the minds of most people is: "Will artificial drying of hay become profitable for the average farmer or dairyman?"

Silage Feeding Pays

Six lots of beef calves were carried through the past winter on roughage rations, and a seventh lot fed full feed of shelled corn and alfalfa hay as a check, at the Nebraska College of Agriculture. The highest daily gain was made on a full feed of silage and a pound per day of cottonseed cake for each calf. Average daily increase on the lot of 14 cattle was 1.86 pounds per head over a period of 135 days. This was only .3 pounds a day less than the gain on full feed of corn and alfalfa, while the feed cost per hundred pounds gain was 84 cents less, or $7.33.

Ground corn fodder with one pound per head each day of cottonseed cake resulted in the lowest cost gain—$6.57, with a weight increase of 1.37 pounds per day. Next in cost was a lot of calves wintered on ground fodder and a limited amount of alfalfa. Highest cost gain was made on full feed of corn and alfalfa—the check lot.

At the same time the foregoing facts were being brought to light, the Fort Hays Branch of the Kansas Station was developing some interesting results regarding best methods of feeding grain sorghum fodder.

In a two year test, four lots of yearling cattle were fed one pound of cotton cake per head each day, along with a roughage of kafir in the following forms: Whole fodder, fodder cut into small lengths with a silage cutter, ground fodder, and kafir silage.

When returns per acre were considered silage gave the greatest gain; ground kafir fodder was next; while simply cutting or chopping resulted in only a slight increase over feeding whole. This indicated that ensiling or grinding would be profitable.

Business Hobby

(*Continued from page* 17)

eight dollars a month, and that's the greater part of our household bill, though we have a waffle iron, vacuum cleaner, washing machine, ironer——."

"Do you use the ironer for everything?" interrupted my wife, turning to Mrs. Peck.

"No," she said, "I generally do the flat things while the two older girls iron with hand irons. Then we all get through about the same time."

An electric egg beater stood on the kitchen table. Mrs. Peck saw me glance at it and picked it up to show me.

Many Uses

"I use this a lot for mayonnaise, for whipping cream, for frosting, and angel food,—oh—everything," she said with a smile.

"But the corn popper is best of all," said one of the little girls.

"Uhuh," said the ten year old boy, "that's what I like, too."

"Well, it will soon be time to start using it again," I suggested comfortingly.

"Again," said Mrs. Peck, "we use it at least three times a week. You never saw such a family for popcorn."

Fond Wife (to husband returning from hunting trip): Oh, darling, I'm so glad you've come. We heard some idiot had fallen over the cliff and I felt sure it was you.

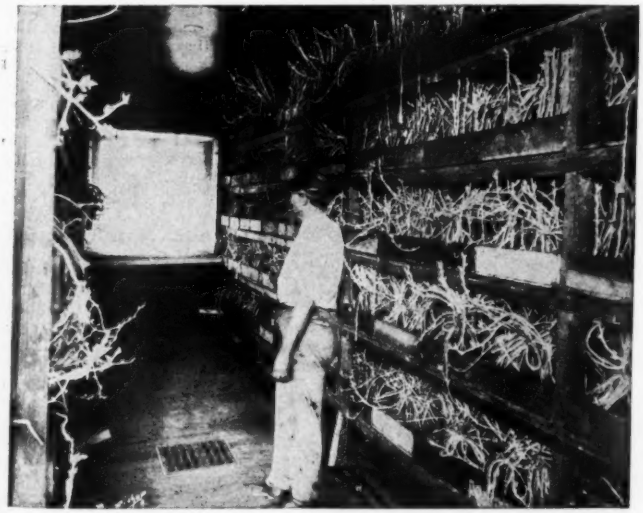
How Insects are Controlled with

Bugs that Kill Bugs

By Mel Wharton

IN California there has sprung up an industry new to agriculture and horticulture, the raising of lady bird beetles or "lady bugs" for use in a statewide battle against the mealy bugs which attack citrus fruit trees, vines, field and truck crops. During 1930 more than 40,000,000 of these orange-backed beetles, known as cryptomaelus, or "crypts" for short are being propagated in 14 electrically heated and controlled hatcheries for distribution at cost to infested areas.

California has approximately 250,000 acres of bearing citrus groves on which some owners have spent as much as $1000 a year in attempted control of mealy bugs which lay their eggs in the buds, reducing both quantity and quality of fruit in alarming degree. The mealy insect also attacks potatoes, grapes, rye, rhubarb, roses, blackberries, raspberries, figs, and numerous other truck and orchard crops. The harmless-to-vegetation lady bird is the natural enemy of bug, and has been found exceedingly effective against it at a small fraction of the cost of sprays and poisons. Consequently 40,000,000 control insects are being liberated



Interior of a Southern California insectory showing potato sprouts in racks. Note electric heating units on floor at right. Heat is maintained at 80 degrees day and night, this temperature being found best for potato sprouts, mealy bugs and lady bugs.

A Burlap Screen. The white spots are mealy bugs, the dark ones the crypts or lady birds. Note capsules in which the lady beetles are collected for shipment.

this year throughout California as a method of successfully combatting the mealy bug.

The insectories themselves are not of any special design or construction, save that they are made to hold heat and moisture. The first order is the raising of potatoe spouts. This is accomplished in boxes arranged in tiers in the insectories by maintaining artificial heat 24 hours daily, usually with electric heaters. When in vigorous sprouting the potatoes are infested with the mealy bugs which feast on the sprouts and propagate rapidly. Then, when the mealy bugs are at hey-day of development, a comparatively small number of lady birds, about 3000, are introduced. These "crypts" feed upon the mealy bugs in the insectory and also lay their eggs, 200 at a time, in the soft, cottony down of the white, oval mealy insects. When the young lady birds hatch they, too, feed upon the mealy bugs. At the end of five months from the time the potatoes were put in the trays, the 3000 adult lady birds will have increased to 125,000. Of course many hatcheries are larger than this and will raise several millions of crypts in a year.

Placing a capsule of lady birds on an orange tree in a Southern California grove.

Burlap screens are placed at intervals through the insectories. The mealy bugs, crawling about in search of food and perhaps to avoid the the lady birds, go to the screens. Here also the lady birds congregate to attack and eat them. Attendants gather the lady bettles at the screens, an average worker being able to place 2000 in gelatine capsules in an hour. Some fast collectors have captured 6000 an hour. Ten at a time they are placed in these capsules, which are just like the regular quinine capsules, and in that manner shipped to infested areas.

Automatic Heat Control

During hatching time of both lady birds and mealy bugs a moist temperature of never less than 80 degrees F., is maintained day and night. This heat is electrically controlled and many of the insectories have installed electrical heating apparatus on account of its many advantages. Lessened fire hazard, freedom from fuel annoyance, automatic control and perfection of temperature control are features stressed by insectory managers having such equipment. Some insectory men assert that a greater percentage of lady birds are obtained through use of automatic

(*Continued on page* 48)

Cuttings Thrive
with Electric Heat

By Geo. W. Kable

ELECTRICITY has been used both in this country and in Europe to a considerable extent for heating hotbeds. It has given very satisfactory results for this purpose and the number of installations is increasing rapidly.

Recently I found a new use for the electric hotbed heating elements. It was on the farm of Mr. Herbert W. Collins near Mt. Clemens, Michigan, and on the lines of the Detroit Edison Company. Mr. Collins had installed a number of hotbed heating elements under the tables on which he grew his cuttings of different plants. The temperature was controlled by a thermostat so that when the temperature of the greenhouse or under the cutting bench reached a certain point the electricity was cut off. If it was found desirable to allow the heat to drop down in the greenhouses a thermostat automatically kept the temperature of the cutting bed at the right point.

One day last April there was a frost. Everyone else in the neighborhood lost many of their tomato plants from that frost. The Collins' had their tomato plants outdoors, but in the electric hotbed. For a few cents their plants did not freeze.

Mr. Collins has found that his cuttings were uniformally better and grew faster when provided with electric heat than they did under the old system. He is enthusiastic about his results as may be seen by the number of units he has installed.

Electric heat keeps these cutting benches at proper temperature and makes the plants root faster. Heat from the bottom and cooler air on top makes better roots. Heating units are drawn out part way in foreground

The Platform Scale

Celebrates Its 100th Birthday

MODERN industry achieves its profit by eliminating losses, large and small. Hurrying workers in laundries, creameries, packing houses, textile plants and food plants no longer make those slight "over weights" that mount to tremendous losses when repeated by the thousands. Industry has been given quick reading dial scales which reduce errors—dials which make it easy for the speeding operators to weigh correctly. For an accurate scale does not secure accurate weighing unless the chance for human error is as small as modern science and ingenuity can devise.

In practically every phase of the production schedule from raw material to finished product the question of accurate weight plays an important part. It is a far cry from the balance and the steel yard of ancient times to the multitude of special weighing machines now used in every industry. From the earliest days to the dawn of the machine era there was no important improvement until, in 1830, Thaddeus Fairbanks invented the platform scale from which all modern scales are direct descendants. Thus a farm invention grew and spread to encompass all industry.

During the days of the Roman Empire the balance became, with some refinements, the stratera or steelyard.

It was in 1815 that Major Joseph Fairbanks moved from Brimfield, Mass., to St. Johnsbury, Vermont, and set up a grist mill and saw mill on the banks of a little creek that ran through this old Vermont town. His sons, Erastus and Thaddeus, had even broader visions and established a wheelwright and foundry business and then began manufacturing saws, pitchforks, cast iron plows and stoves. About the year 1830 the "hemp craze" struck Vermont and the farmers expected to make substantial fortunes in raising hemp instead of corn. Contracts for making hemp- dressing machines were awarded to the Fairbanks Brothers.

The question now arose— How was the hemp to be weighed? The old steel yard was of little use for this service and so Thaddeus constructed a huge steelyard beam suspended from a high frame with chains to grapple the axle of the cart. An approximate weight was thereby obtained by a slow and laborious process. But Thaddeus studied the problem and finally conceived the idea of supporting a platform upon an A-shaped lever with the tip of the lever connected to the steelyard by a rod. Without realizing it at the time, Thaddeus Fairbanks had revolutionized all commercial weighing methods.

"How Much does a GOOD Water System Cost?"

THERE are no better water systems built than the MYERS. Yet the owner of a MYERS Water System actually pays less for water than most city folks do. A MYERS Junior Direct Water System for shallow wells, costs only $75.00 complete with motor ready for installation and delivers 250 gallons of fresh water an hour. For $105.00 you can get a complete MYERS pressure tank system ready for installation like that pictured below. And even if you use lots of water, the daily power cost for running one of these systems is only a few cents.

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Remember, MYERS makes water systems for both deep and shallow wells, for operation by electricity, gasoline engine, windmill or hand power, with capacities from 250 to 10,000 gallons per hour. The most complete line in the world. See your dealer or write for booklet.

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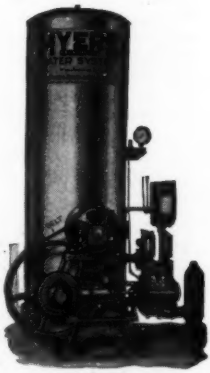


Fig. 2510

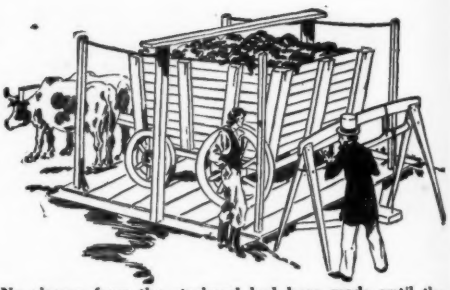
A complete Water System Unit for wells up to 23 feet in depth, with 42 gallon pressure tank. Entirely automatic in action—self-starting, self-stopping, self-oiling. Capacity 250 gallons per hour.

MYERS
Self-Oiling
Water Systems

Make Out Your Next Order to the MYERS

From that moment the steelyard of old Rome began its decline.

A new spirit of industry was being born in the early part of the nineteenth century and Thaddeus Fairbanks had caught that spirit. Typically American and with all the ingenuity that is traditionally associated with the New England Yankee he set out on an undertaking that has carried his name and the idea for which it stands into the remotest corners of the earth.



No change from the steelyard had been made until the invention of the platform scale in 1830.

One of his first designs was a farm scale consistly simple of some castings with the pivots properly set, a beam and a set of weights. The builder would take these parts with him to where the scale was to be set up; there on the job he would cut some timbers about 12 feet long and by fastening these castings to them set up a complete scale. He would go out into the country and cut down a tree, preferring a cherry if he could find one, square the trunk with an adze; then taking the castings from his saddle bags he would make a lever. As there was very little shrinkage lengthwise of the wood a very serviceable scale was soon made.

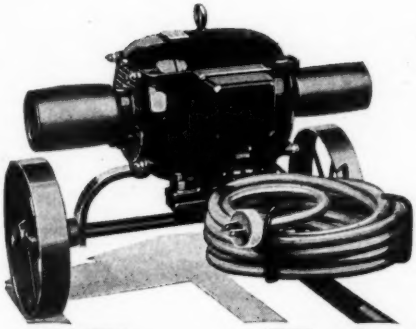
These original designs of Thaddeus Fairbanks have had the greatest influence upon all the scale building in the world ever since the first patent was granted, one hundred years ago. The same is true of the "straight lever" railroad track scale, almost a century old. With one exception all such scales today have been copied from the general arrangement of this scale.

The United States patent for the railroad track scale was granted Thaddeus Fairbanks, January 13, 1857. They have been continuously manufactured at the St. Johnsbury plant for nearly 75 years.

In 1900 scales with type-registering beams were introduced. They are still extensively used by elevators, rolling mills, refineries, steel plants, railroads, etc. The beam is of the usual pattern except that its under edge is provided with a series of type figures corresponding with the weight in graduations. The poise is provided with an internal mechanism so that when the load has been balanced upon the scale by the usual process, a ticket is inserted in a slot of the poise and an impression is made, printing the weight of the load.

Self-indicating or dial machines have been the most recent development in scale making and the St. Johnsbury factory now makes

The modern truck scale is a great convenience on any well managed farm. It will prove an invaluable aid in keeping crop records, or in the buying and selling of farm products.



Real Farm Helpers!

The Master Portable Farm Motor (3 or 5 H.P.) that you can move wherever you have a job to do, such as sawing wood, filling silos, grinding or mixing feed—

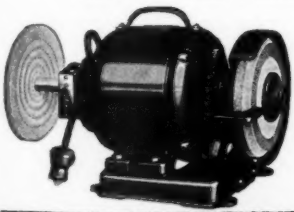
The Master Motor Grinder for sharpening all your farm tools—

Master Motors (1/30 to 10 H.P.) to supply the power to machines and appliances operated with individual motors—

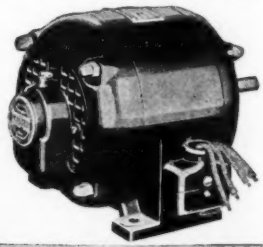
These bring you positive help in farm work, soon pay for themselves. Write for free pamphlets on the rugged, dependable Master Motors—"Power Diamonds."

The Master Electric Company
Dayton, Ohio

MASTER MOTOR GRINDER



MASTER MOTORS
1/30 to 10 H.P.



STOCKS CARRIED IN PRINCIPAL CITIES
MORE THAN 100 SERVICE STATIONS
MASTER GUARANTEED MOTORS
1/30 TO 10 H.P. Dayton THE MASTER ELECTRIC CO. Ohio Not More Than 40°

them in capacities from 50 to 40,000 lbs. Leonardo da Vinci, a brilliant scientist, who lived in the fifteenth century, is credited with inventing these scales, drawings of them in his note books having been preserved. The pendulum mechanism has proven much more accurate and serviceable than the springs that were once used, while the double pendulum gives the most accurate results. Dial scales and automatic weighing eliminate to a great extent the human element and it may be safely predicted that there will be a great extension of this method of weighing.

The world's largest scale is located at the plant of the Hamilton Coke & Furnace Company at Hamilton, Ohio. The Hamilton foundry had installed a movable mixer built on railroad trucks and the Fairbanks scale weighs the entire load, the car and its contents. The loaded mixer weighs a million pounds, six times the weight of a loaded coal car. The new scale is an exact duplicate of other scales except for its large proportions. Though simple in construction, its accuracy is guaranteed to within 20 pounds, 0.002 per cent of full scale. A man stepping on this scale would find his weight registered on the beams with amazing accuracy.

As America's industries have become specialized so too have scales been designed to meet the particular needs of each industry. The in-built accuracy of the modern scale must be matched with an in-built ability to retain that accuracy under all conditions of operation.

Three Cheers

The electric flatiron is certainly my favorite. As our family consists of husband, myself and six children, five of them attending school, the ironing of clothes seems to be one of the biggest items of house work. And in place of a "drudge" the old-fashioned way, the ironing with the electric flatiron is only pleasure, which can be done very well in the evening if a person has been away, or busy during the day.

So I'll give three cheers for the electric flatiron.

Mrs. Elizabeth Haag,
R. D. 2, Box 30, Aurora, Ill.

"This dern pen leaks," said the convict, as the rain came in through the roof.

Two of the early four-point-suspension dormant farm scales—the wagon and the stock scale.

Will you carry water again this winter?

EVERY farm woman knows that water carrying is bad enough when the weather is nice, but when winter comes with its slush and sleet and bitter cold, those countless trips to the old pump become journeys of aching drudgery.

Why carry water again this winter? There's not one sound reason why you should—not one! Don't deny your loved ones the greatest comfort and convenience you can give them—running water under pressure right in your home, in the barn and other places with a Duro Water System.

And Duro is not expensive. Rather it is a money-saving, money-making investment. See about getting your Duro Automatic Electric Pressure Water System now. Duro is low in first cost, low in operating cost and you can buy it on very convenient terms, if you wish.

Mail the coupon for free booklet.

THE DURO COMPANY, 537 E. Monument Ave., Dayton, O.

MAIL THE COUPON FOR FREE BOOKLET

DURO *Automatic* WATER SYSTEMS

THE DURO COMPANY, 537 E. Monument Ave., Dayton, Ohio

Please send me full information on Duro Water Systems, and free advisory service on my requirements.

Name..... Address.....

ELECTRICAL HOUSEKEEPING

Conducted by
GAIL MEREDITH

It's Nice to Get Up In the Morning

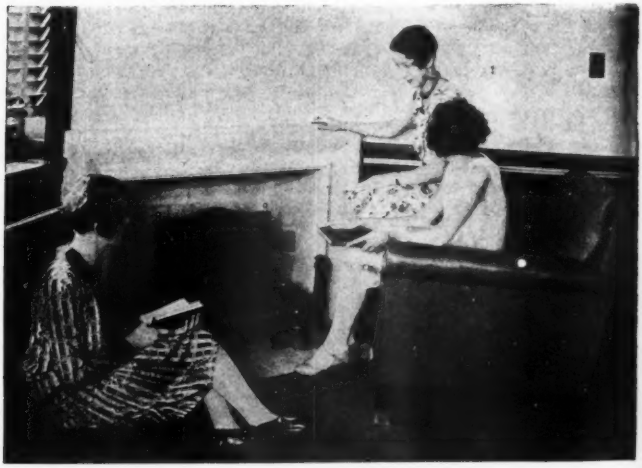
IF you ever heard Harry Lauder sing, you probably remember the rollicking song that went something like this:

"Oh it's nice to get up in the morning,
When the sun begins to shine,
At four or five or six o'clock
In the good old summer time
But when the winds are blowin'
And it's murky over head
"Oh it's nice to get up in the morning,
But it's nicer to lie abed."

And ten to one you shivered a delicious little shiver and agreed with him, all because getting up these brisk fall mornings is a chilly job.

Yet there are ways of getting comfort into that thankless hour, if you just know how. You can turn on a little heat just as you turn on your light and dress without shivering. There are electric heaters you can plug into an outlet in the kitchen to help you work without numb fingers while the fire is getting under way or on those mornings when you thought perhaps it really wasn't necessary to have the furnace going yet; or maybe before the stoves were even up and a sudden cold snap sent the thermometer down.

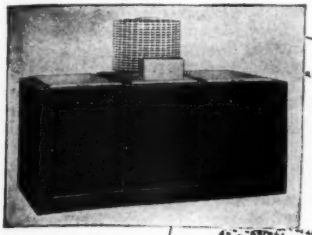
Ordinarily electric heaters are not designed for any ambitious system of house heating, but are planned to give a little bit of heat in one particular spot for five minutes, or an hour, or all day, as the case may be. They are simple af-

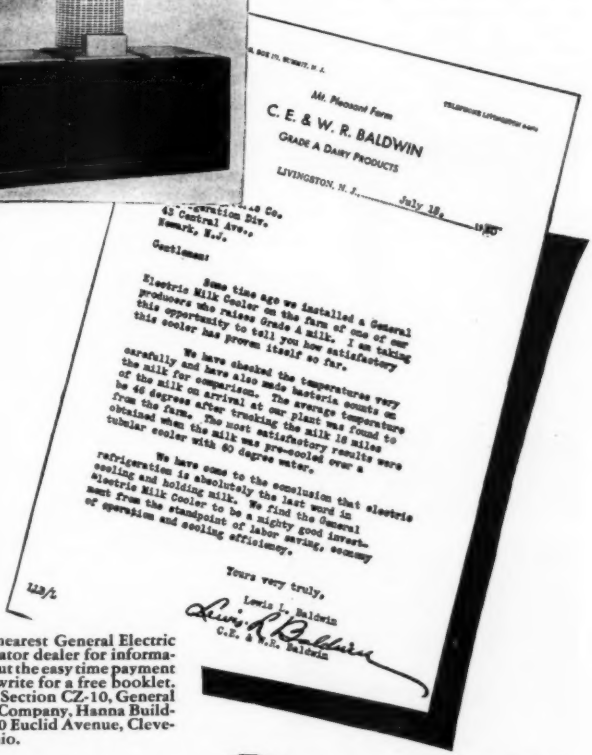


The coal is glass—and electricity flickering beneath gives a pleasant red glow.

"The *last word* in milk cooling because it saves"

So says Lewis L. Baldwin of C. E. & W. R. Baldwin Co., Grade A Dairy Products.





Mr. Pleasant Farm

C. E. & W. R. BALDWIN
GRADE A DAIRY PRODUCTS
LIVINGSTON, N. J. July 18, 1930

...eration Dist. Co.
45 Central Ave.,
Newark, N.J.

Gentlemen:

Some time ago we installed a General Electric Milk Cooler on the farm of one of our producers who raises Grade A milk. I am taking this opportunity to tell you how satisfactory this cooler has proven itself so far.

We have checked the temperatures very carefully and have also made bacteria counts on the milk for comparison. The average counts on of the milk on arrival at our plant was found to be 46 degrees after trucking the milk 18 miles from the farm. The most satisfactory results were obtained when the milk was pre-cooled over a tubular cooler with 60 degree water.

We have come to the conclusion that electric refrigeration is absolutely the last word in cooling and holding milk. We find the General Electric Milk Cooler to be a mighty good invest-ment from the standpoint of labor saving, economy of operation and cooling efficiency.

Yours very truly,

Lewis L. Baldwin
C.E. & W.R. Baldwin

LLB/t

See the nearest General Electric Refrigerator dealer for information about the easy time payment plan or write for a free booklet. Address Section CZ-10, General Electric Company, Hanna Building, 1400 Euclid Avenue, Cleveland, Ohio.

GENERAL ELECTRIC
Milk Cooler

ELECTRIC REFRIGERATORS • COMMERCIAL REFRIGERATORS • ELECTRIC WATER COOLERS

fairs. Many of them are big bowls with an electric heating element screwed in the center, and a guard across the front to keep your clothes or the baby's curious little hands from touching the glowing wires.

The bowls are mounted on a heavy base so they will not readily tip over. These heaters can be plugged into any convenience outlet.

I have used the same heater for more than five years in my home. We use it a great deal. It is comfortable to dress by; it makes baths endurable in a chilly bathroom. We have never yet had to replace the heating element.

This heater can be used anywhere within reach of a convenient outlet.

Our heater is quite plain, but many of them are decidedly decorative for any room.

These reflector heaters are particularly desirable because they can be carried here and there to take comfort to any corner of the house.

Fire place heaters that look like logs or like beds of coal are designed for electric heat. And there is another type that deserves attention for folks who are remodelling or building new homes. These are built-in heaters for the bathroom.

They ordinarily have a higher wattage than the portable heaters, so, of course, they give more heat. They are built in the wall and look like a register. They are set in higher up than registers are, though, so you can stand before them and dress. They will easily warm a small bathroom, and they are a most convenient source of heat to keep the baby comfortable during his bath.

The Bed Pad

Then there is the heater that is concealed in a warm wooly pad to take to bed with you. It is a far cry from the bricks and soapstones, and irons we used to heat and wrap up in newspaper, and then in a square of old blanket to put at the foot of the bed, to these modern devices.

All winter long, when I was a child we kept a soapstone on the back of our coal stove. Wrapping it up and tucking it into my grandmother's bed was a regular nightly chore. Forgetting to put it back on the stove in the morning was nothing short of tragedy.

Nowadays when we come in late from a long, cold ride, when the furnace is sluggish, and we are cramped and cold, we open our windows wide, turn the heater on full and crawl into bed to stretch out in luxurious warmth and comfort, instead of lying all rigid and tense, waiting to get the bed warm with our own shivering bodies.

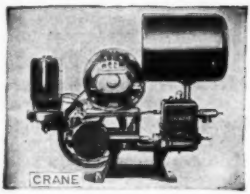
That is comfort.

If towards morning it turns suddenly cold, and we wake up, we do not kick a cold iron out on the floor with a resounding crash. We fumble sleepily for the switch but-

For only a few dollars down

You can have running water on your farm

FEDERAL and State Agricultural Departments have long emphasized the necessity of running water on the farm. They have proved conclusively that it makes profits by adding to yield in produce and provisions; that it safeguards health and lightens labor in the barns and dwelling. Now the last reason why your farm can't have running water is removed. You can purchase any type of Crane water system and have it installed under the Crane budget plan for only $5 to $14 down, the balance in small monthly payments.



Crane deep well water system No. 850, made in sizes and capacities to meet all needs, pumps from depths down to 250 feet. Crane shallow well systems No. 252 available in sizes and capacities up to 6000 gallons an hour, pumps rom depths down to 22 feet.

This means that you don't have to satisfy yourself with an inferior system; you can have one backed by the Crane 75 year reputation.

If there is any question concerning which type of system will serve you most profitably, drop into the nearest Crane branch or consult a reliable Crane plumbing contractor.

CRANE

CRANE CO., GENERAL OFFICES: 836 S. MICHIGAN AVENUE, CHICAGO
NEW YORK OFFICES: 23 W. 44TH STREET
Branches and Sales Offices in One Hundred and Ninety-six Cities

ton on the heating pad, and bask like cats in a pleasant glow of warmth.

The cost of this little extra warmth is comfortingly low.

The portable heaters and the heating pads take about 500 watts. That means that they use five times as much current as the light in your kitchen, shall we say.

We can run our heater steadily for two hours for one kilowatt hour of current. I figured one winter that we were using the heating pad about twenty minutes every night.

Twenty minutes is a third of an hour. In thirty days I would use it ten hours. Since it takes two hours for the heater to use one kilowatt hour of current, it would be using just five kilowatt hours in the whole month.

Pineapple-Marshmallow Mousse

THE other day I ate a frozen dessert that was so good that I immediately hunted up my hostess and clamored for the recipe so I could share it with you. It can be frozen in any mechanical refrigerator or in a can packed with ice and salt.

It takes fifteen marshmallows, a small can of crushed pineapple and a cup of whipping cream.

First, you put the marshmallows in the top of a double boiler and melt them to the consistency of whipped cream. Then drain the pineapple pretty thoroughly. You put back two tablespoons of the juice, but since you do not want too much, it is wise to drain the pineapple and measure the juice. Next add the juice to the marshmallow, stir in the crushed pineapple, and last of all, cut in the cream, whipped stiff.

Put the mixture into one of the freezing trays of the refrigerator and let it alone until you are ready to serve it.

The gelatine in the marshmallows stiffens the cream, of course. Their sugar sweetens the dessert enough. When it is frozen, it is fluffy and delicious.

Our Neighbors

Everyone knows some farm woman that the rest of us would be interested in. If you do, won't you write me about her for *Our Neighbors* column? If she does something unusual or interesting, tell us about that. Tell us everything you can think of about her. Yes, gossip as much as you like. If you can get a picture of her, or of her activities, send that too.

GAIL MEREDITH.

Marketing Direct

THERE is more than one kind of cooperative marketing. Many farm women are finding that direct hand to mouth selling is one of the most effective varieties.

This young man is interested in refrigerators, too. Or maybe in what's in them.

The Green Knight

PAUL WATER SYSTEM
New Low Price!

$75

THE Paul Green Knight Water System provides the wonderful convenience of an *unfailing water supply, instantly available,* for the kitchen, laundry or bath! Mighty satisfying too—to have plentiful water, with adequate hose pressure, for sprinkling the lawn, fire fighting or washing the car.

THOUGH miles removed from city water facilities, you may, by the installation of a Paul Water Supply System, *enjoy the same modern bath, laundry and kitchen convenience as your city neighbor.* Best of all, you can enjoy this Water System while you pay for it. Only a small amount down and 12 small monthly payments buys it. *Write today for more details.*

Sold on Easy Payments

FORT WAYNE ENGINEERING & MFG. COMPANY
Fort Wayne, Ind.

Pumps and Water Systems — *Water Softener Heaters*

Ft. Wayne Engineering & Mfg. Co.,
***1722 N. Harrison,* Ft. Wayne, Ind.**

Send complete information and prices on Paul Green Knight Water System . . . and Easy Payment Plan.

Name.....

Address.....

5 Horse Power Century Portable Power Unit

Doubly Efficient Farm Power

The Century Portable Power Unit is easily wheeled into almost any position—the steel base and adjustable belt tightening bar hold it in proper alignment . . . . combining portability with all the advantages of a permanent installation. Furnished for single or polyphase power.

CENTURY ELECTRIC CO.
1806 Pine St. St. Louis, Mo.

40 U.S. and Canadian Stock Points and more than 75 Outside Thereof

Century MOTORS

Mrs. W. F. Seffren thinks so. She lives on a farm near Van Dyne, Wisconsin. That is between Fond du Lac and Oshkosh on a highway that hums with cars all day long. She gets her buyers by renting them rooms at night. Once they have stopped they are eager enough to buy her garden truck, her fruits and her skillful baking disguised as supper and breakfast.

Direct Market Pays

And that, everyone tells me, is the thing that makes this tourist business pay, the fact that they furnish a direct market for the things that are raised or made on the farm.

"When I decided to rent rooms, folks around here said I was crazy," Mrs. Seffren told me with her grave, sweet smile. "They said I'd lose more than I'd ever make letting anyone and everyone into my house. But tourists have been coming here four years now, and I've never lost so much as a wash cloth. There's been lots of real nice folks stop here and we've enjoyed having them."

I can well imagine that the folks who stopped liked it, too. It is a pleasant house to visit, and it offers to dusty travellers the comfort of conveniently lighted rooms, a bathroom and appetizing meals.

The day we called Mrs. Seffren and Grandma Seffren were entertaining a guest, but they were very cordial to us just the same, stopping their visit to chat with us, and to let us get some pictures in the house.

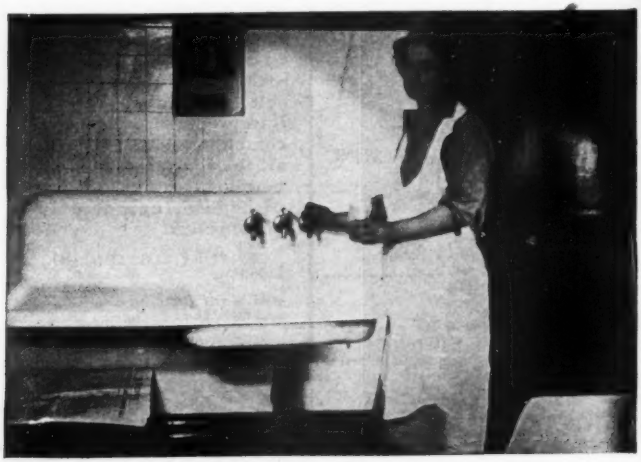
Mrs. Seffren is a busy woman. She had just finished up the six weeks' job of taking the census in her township and was beginning to get ready for her summer job of entertaining tourists when we were there.

"They're coming early this year," she said. "Generally they begin along toward the end of May, but here it is only the middle and folks are stopping already."

"How many can you have at once?" I asked.

"Eight," she replied. "And half of them will get up one time for breakfast ,and half another. But that doesn't fret me any more. I put my electric percolator and toaster right on the table, and each group can have fresh coffee and hot toast just when they are ready for it."

(*Continued on page* 48)



Mrs. Seffren has a Pleasant Kitchen

A Feed Grinder ~ Recommended by your Power Company

PRATER MILL

Grinds without attention while you do your other work

5 H.P. SIZE $75.00

Hammer type—no gears or plates to get out of order. Ask your power company or dealer for complete information. Or send to us for FREE catalog.

PRATER PULVERIZER COMPANY

Dept. K CHICAGO

High Pressure **WATER**

ALL OVER THE PLACE

PLENTY of fresh, clean water for the kitchen, bathrooms and laundry; in the barns and for watering stock—all at a **cost of only a few cents a day**—with a Kewanee High Pressure Water System. And high pressure water means real protection from fire.

Every part of a Kewanee System is made **over size and over strength** — all fitted, accurately adjusted and painstakingly tested at the factory.

200 Models and Sizes for from 200 to 10,000 gallons per hour. **Our new No. 70 of 250 gallons capacity sells for but $75.00.** Ask for helpful bulletins, and the assistance of our Engineers in solving your water problem.

KEWANEE

HIGH PRESSURE

WATER SYSTEMS

KEWANEE PRIVATE UTILITIES CO.

464 Franklin St., Kewanee, Ills.

STEWART

STOCKMAN

Electric Clipper

Established Quality

Biggest Value

Among its features are: Full ¼ H.P. motor that will also run pump, churn, washing machine, etc. Equipped with latest model Stewart B-1 Clipping Head —the world's best. Does quicker, better job of clipping cows, horses, mules — and is easier to use.

Clip cows before stabling in fall and each month — boost profits dollar a month per cow.

Write for FREE Catalog

describing Stewart, the most complete line of Clipping Machines, both hand models and power operated types.

We can adapt your hand clippers and shearing machines for use with motor for $5.50. Write for particulars.

Chicago Flexible Shaft Company

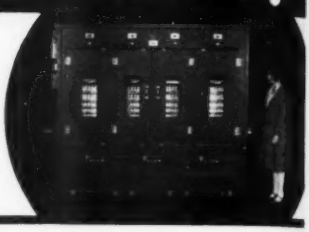
5524 Roosevelt Road : Chicago

World's Largest Makers of Clipping and Shearing Machines

MAKE REAL PROFITS!

PETERSIME Electric Incubators are making larger profits for Hatcherymen and Poultrymen everywhere. Unmatched results—Lowest operation costs—built in five sizes from 1,400 to 15,984 capacity. Write for NEW Catalog—FREE—No obligation.

Ira M. Petersime & Son
EF10, Gettysburg, Ohio



only $78.50
F. O. B. Factory
0-113

Don't go another Winter without a DELCO Water System

Small down payment—easy terms—warranted by Delco-Light and backed by General Motors. Free book describes complete line. Write today for a copy.

DELCO-LIGHT CO., Dept. C-24, Rochester. N. Y.
Subsidiary of General Motors Corp.

Also Manufacturers of Delco-Light Electric Power and Light Plants and Delcogas for Household and Commercial Use.

DELCO ELECTRIC WATER SYSTEMS

PRODUCTS OF GENERAL MOTORS

Andis Animal Clipper

The One-Man, One Hand Clipper

No stands, trolleys or cables. Clips udders, flanks, 8 to 12 cows an hour. Satisfaction guaranteed. See dealer or write for full description and special offer.

ANDIS CLIPPER COMPANY
1642 LAYARD AVE....RACINE, WIS.

NEW WAY TO CHURN

Thousands are changing to this simple, convenient, modern way to churn. It's the famous DAZEY principle adapted to electrical operation. Ends the drudgery. Just turn the switch. Made in 2, 4, 6 and 10 gallon sizes. Write today for catalog and further information.

DAZEY CHURN AND MFG. CO., Dept. 27
Warne and Carter Avenues, ST. LOUIS, MO.

An Explanation

The cover picture on the August issue of ELECTRICITY ON THE FARM did not mean that we are predicting or suggesting that one 5 h.p. electric motor will take the place of or can be substituted for 5 horses.

Horse power, often abbreviated h.p., is the unit for measuring the force exerted by machines. A 1 h.p. engine can do 33,000 foot pounds of work per minute, which means raise 33,000 pounds one foot in a minute, (550 foot pounds per second).

Electric service is measured in terms of kilowatt hours. It takes 746 watts or approximately ¾ k.w. to equal one horsepower. One k.w. hour of electricity will therefore, figuratively speaking, put at your service a horse and a third for one hour.

Front Cover Title Contest

First Prize for August—$25.00

"A good buy and a good-bye"

Mrs. Wm. Monteith, R. 2, Roberts, Wis.

The following titles have been selected as winners of the $5 cash prizes:

"Old Dobbin now must stand aside. He finds his job electrified."—Geo. R. Swartout, Hartwick Seminary, N. Y.

"Yester's 'horse power' was housed and fed. Today's needs just a little shed."—Mrs. H. M. Hutchings, R. 2, Bancroft, Mich.

"More power, more speed; No dirt and no feed."—Mrs. E. M. Applebaugh, R. 5, Cherryvale, Kans.

"The motor does the work of five on the modern farm electrified."—Carla Jane Nusbaum, Hartland, Wis.

"Electricity gives to modern man five times the work his horse can."—Mrs. E. J. Ellis, R. 4, Evansville, Wis.

Rules for October Contest

For the best title to this month's front cover illustration, a cash prize of $25.00 will be awarded.

In addition we will pay $5.00 for each of five titles given honorable mention.

In case of a tie, each winning contestant will receive the full cash prize to which he or she is entitled.

The winners will be announced in the December issue.

Only the farmers or members of the farm family, to whom this magazine was sent, are eligible.

Only one title may be submitted.

Use the form below or write your answers on a plain sheet of paper in similar form.

Be sure to answer questions (a), (b).

Write plainly and send your suggestion to the Title Editor, ELECTRICITY ON THE FARM, 24 W. 40th St., New York, before November 1.

My title for October Front Cover picture is.....

.....

.....

.....

.....

(a) Has your family an automobile?.....

(b) Name make or makes, including trucks as well as passenger cars. ...

.....

.....

Name .....R. F. D.....

Post Office.....State .....

Questions and Answers

Conducted by H. J. GALLAGHER
Agricultural Engineering Dept.
Michigan State College

Note—Readers are invited to send in questions which will be answered in the order received. Names are omitted from questions unless otherwise specified.

H. J. GALLAGHER

Question: *At what speed will a five horse power motor pull an eight inch burr mill?*

Answer: An eight inch burr mill operated at a speed of 500—600 revolutions a minute (r.p.m.) is within the limit of five horse power operation. A 4½ inch pulley on the motor and a 14 inch pulley on the mill gives this speed. This combination will not operate the mill at full capacity, however, and the feed gate will have to be regulated to control the flow of grain to the burrs. From the standpoint of automatic operation this makes little difference. The burrs should be examined at least once a month to see that their cutting surfaces are sharp. Dull burrs require too much power to make home grinding profitable. Magnets in the spouts feeding grain to the mill will help protect the burrs from bits of metal that may be in the grain.

In applying electric power to any farm machinery remember that the definition of power is: "The rate at which work is done or 'SPEED' of operation." Slow speed means less power, is easier on machinery and usually results in more efficient operation. To reduce the speed of operation increase the size of pulley on the driven machine or decrease the size of pulley on the motor.

Question: *I have an electric pump in a wood shed about twenty-five feet from the house. Last winter it bothered by freezing. How can I keep it from freezing this winter?*

Answer: If the water level in your well is not over twenty feet lower than the basement of your house, move the pump into the basement and connect it to the well below the frost line. I assume though that your well is a deep well where the suction lift is over twenty feet and the pump cylinder is in the water. With this kind of a system an anti-freeze attachment can be put in the well pit and connected to your pump so that the water is not pumped above the frost line. You could then have the pressure tank and pressure switch in the basement of the house and all the water piped below the frost line. An anti-freeze attachment is merely a by-pass that guides the flow of water where desired.

Another method is to install the pumping head motor and pressure tank in the well pit. Well pits are usually damp and unless well ventilated are apt to cause motor trouble.

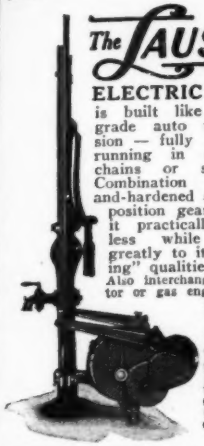
Question: *What size lamps should be used in a laying house during the winter months? Should they be used night and morning or morning only?*

Answer: One 40 watt lamp for every 200 square feet of floor space is the general recommendation for poultry house lighting. The lamps should be equipped with 14 inch or 16 inch dome reflectors and placed ten feet apart at a height of six feet from the floor where possible.

Using lights in the morning only is more common practice than the combination of night and morning operation. Where night lights are used the birds have difficulty in going to roost unless dimmers

A DIRECT GEARED ELECTRIC JACK

with a reputation for durability, performance and maximum safety.



The LAUSON

ELECTRIC JACK

is built like a high grade auto transmission — fully enclosed, running in oil. No chains or sprockets. Combination of cut-and-hardened and composition gears makes it practically noiseless while adding greatly to its "wearing" qualities. .. Also interchangeable motor or gas engine types.

Complete Water Systems

Write for Literature on Either or All.

THE LAUSON CORPORATION
700 Michigan St., New Holstein, Wis.

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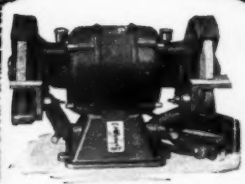


PORTABLE BALL BEARING COMPACT — LIGHT and POWERFUL

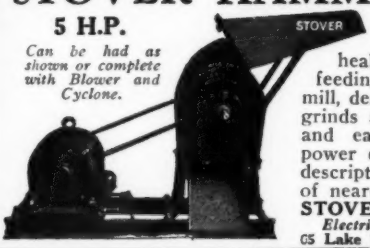
Every farm has hundreds of uses for this little grinder. You really can't afford to be without one. No workman is better than his tools make him. This grinder will make it easy for you to keep them right on edge for your every job. The price is only **$35**

Marathon Electric Mfg. Co.
Wausau, Wis.

STOVER HAMMER MILLS

5 H.P.

Can be had as shown or complete with Blower and Cyclone.



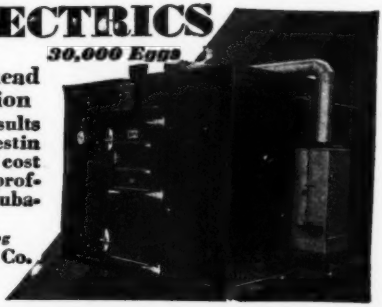
Cut Feeding Costs

Ground feed makes healthier, better stocks—cuts feeding costs 20%. This Stover mill, designed for high-line use, grinds all small grains, shelled and ear corn. Consult your power company. Write us for descriptive literature and name of nearest dealer.

STOVER MFG. & ENG. CO.
Electric Driven Farm Machinery
65 Lake Street Freeport, Illinois

SMITH ELECTRICS

52,000 Eggs **30,000 Eggs**



The Farthest Step Ahead in Electrical Incubation

FIRST in performance, results and quality chicks. Lowest in current consumption and cost of operation—highest in profits. The outstanding incubator of today.

Write for new Electric Catalog

The Smith Incubator Co.
3102 W. 121st St.
Cleveland, Ohio

are used. The object in using lights is to furnish four additional feeding hours per day and this can usually be done better in the morning.

Bugs That Kill Bugs

(*Continued from page* 28)

electric heating and control than by any other means.

The cost of raising 10 lady birds is about 3 cents. The capsuling is additional. In citrus groves one capsule containing 10 lady birds is liberated at each tree. This number of crypts has been found sufficient to control infestation. The average is about 700 lady birds per acre. It is said that the average cost of attempted control of the mealy bugs by other methods was about $150 per infested acre. The cost of infinitely more perfect control, including wages to hired hands, is placed at not more than $10 per acre, and usually less.

The raising of these valuable lady birds has, within the last few months, become an established and permanent industry. A few large private holdings have built and equipped their own insectories, supplying only their own wants. Several associations maintain insectories, selling to their members at cost. The state also has similar insectories supplying the crypts to all who want them. It is estimated that the 40,000,000 liberated this year will be sufficient to keep citrus groves relatively free from mealy bug damage.

A Satisfied Servant

Of all my trim electric maids I like my washer best. It is great to see her save me work and cash and time to rest. She never strikes for higher pay; nor do I have to feed her; she does not shirk nor steal, she's on the job whene'er I need her. She's always singing at her work, her cheer is quite contagious. She never "sasses" back at me, nor flies in rage outrageous. And when she isn't working she quiet sits and sleeps. I wouldn't trade her for a farm; we're friends and pals for keeps.

Mrs. R. W. Curren,
R. 1, Elmira, N. Y.

Marketing Direct

(*Continued from page* 42)

"They do enjoy getting home cooked foods, and plenty of fresh vegetables and fruit. I have some everbearing raspberries out in my garden, and they keep us in berries till fall."

"Eight people at a time," I mused, "and that in addition to your own family. Well, I guess you manage to keep a washing machine busy."

"I do," agreed Mrs. Seffren, "and an electric iron, too. There are plenty of sheets and pillow cases to go over, I can tell you. But, I am not sure that my refrigerator isn't the most important help of all. You see, I never had ice before, and it is such a help in serving meals. The milk and cream are always sweet; the butter is hard and cold; and I can keep things over from one day to the next. It just seems to me that that refrigerator makes my whole tourist trade possible."

I looked over at the big white box admiringly.

"I should think," I said hesitantly, for it seems a bit intrusive to discuss the matter of money, "I should really think that the tourists might pay for it for you, too."

Mrs. Seffren looked over at me with a friendly twinkle in her lovely brown eyes.

"They did," she said.

Parson Beats 'Em to It

By Mrs. R. A. Ellis

To rural cousins boasted Ned:
"Why, Mother'll cook and wash and sew
By 'lectric power, for Dad's done said
He's going to 'stall a Dynamo."

"Preacher's done done it," bragged back Jim;
"'Cause, when we went to church, you know,
He bawled right out, 'Please lift the hymn,
We're goin' home to die-no-mo'"

The De Laval Magnetic Milker

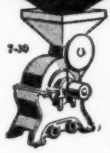
is the world's most economical and profitable method of milking. Ideal for operation by electricity.

The De Laval Separator Co.

New York Chicago San Francisco

GEHL HAMMER MILLS Grind Right Along without ATTENTION

FOUR SIZES



Grind Grain at 60c a Ton

Send for new GEHL catalog. See the electric Special 5 H.P. Mill. Grinds anything. Costs less, cuts down upkeep. Any farm can afford a GEHL.

Runs with 5 H.P. up

The No. 713 (5 H. P. Model 1) Grinds 1000 lbs. Oats per hour with 5 H.P. motor, 1800 lbs. with light tractor. Four Sizes.

Works Fine Also as a Grain Blower

Don't buy any mill until you post yourself on the new light running, big-capacity, trouble-proof, long-lasting GEHL Hammer Mills.

Write today.

GEHL BROS. MFG. CO.

849 So. Water St., West Bend, Wis.

BEVAN

Roller Bearing Electric Pumpers —Units and Pump Jacks for all depth wells. Literature on request

ACME MACHINE CO.

2901 Fremont Ave. So. Minneapolis Minn.

Don't

Overlook

Page 51

SAFEGUARD

Guaranteed

Electrical Protection Equipment

Burglar Alarms
No-Voltage Alarms
HYLO Thermostats
Power Units

Descriptive Literature

SAFEGUARD ALARM CO., Inc.

Council Bluffs, Iowa

MAKE BIG MONEY

— WITH OUR LIST PRICE —

BARGAIN CATALOG

Bargains in motors, grinders, saws, pumps, compressors, paint sprayers, exercisers, drills, cellar drainers, lathes, blowers, lighting plants, water systems, flexible shafts, stock clippers, washers, furnace fans. Write for free copy and wholesale prices to you.

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BERWYN, ILLINOIS

New, Low Cost Hen House Makes Hens Lay in Winter

With same hens, same feed you can get enough high priced winter eggs to pay big return on small investment. You CAN do it NOW on easy monthly terms.

Costs Only $1.50 per Bird

Tight — Warm — Ventilated

New design gives fully insulated and ventilated (Genuine King System) house at cost of ordinary shed. Babson Farm Service Man will call on request. Write!

Babson Manufacturing Corp.
Dept. C-851
2843 W. 19th St., Chicago

Sweet and Dustless

Who can doubt that the electrical vacuum cleaner is the best antidote for domestic strife among all the labor-saving devices. We need not now sweep and beat until our backs are broken and our nerves shattered. Instead of a state of general disorder, masculine dismay and feminine tears during seasonal house-cleaning period, we can now keep sweet and dustless each day. With weekly extras to constitute house-cleaning the male members of the household need never suspect any undue activity or misplacement of prized possessions. With gown changed for dinner and the movies, all is well.

MRS. JOHN W. RAYMOND, JR.,
Lawrenceville, N. J.

Ease and Enjoyment

Not until we purchased our electric washing and wringing machine did I realize the ease and enjoyment there is in washing. Electricity makes it possible to accomplish more in a short period of time, therefore saving time. Even those who are not strong physically can be successful with electricity's aid. It does work quickly and completely which is a service enjoyed by everyone. Electric equipment and apparatus can be operated at a minimum cost. Many times there is not sufficient space for a large, bulky machine but a compact electric one will do the work with better satisfaction. Everyone should patronize and praise electricity because of its great help to mankind.

Respectfully yours,
BEULAH H. SMITH.

A Well-Remembered Surprise

The surprised look on the face of the girl on the July front cover takes my thoughts back to a few years ago when I was equally surprised by electricity.

At the particular time I have in mind, I had been away from home for a short time. Upon returning I discovered that my husband had planned one of the pleasantest surprises I had ever received. On entering the house I found it brightly illuminated by electric lights. Since that time I have been receiving one grand surprise after another, as we have added to our electrical conveniences. What was formerly drudgery in the way of housework now seems to be only pleasant tasks. As I go about pressing a button here and plugging in an appliance there, I realize that it would be impossible for me to have to go back to the old way of doing things. I certainly wish every home could have the "ever ready" help of electric current.

MRS. VERNON PARRISH,
Lyons, N. Y.

'Twould Be a Washer

Just press the button,
And away we go;
Dresses, blankets and overalls
Are all washed, you know.

Now I can scrub,
And now I can bake,
And still have time
My dinner to make.

I have no aching muscles,
Nor no blisters red.
Time to do that needed sewing
And to rest a bit instead.

To those dear wives and mothers
Who must their poor backs bend
Over that awful washboard,
Pray meet this new-found friend.

If only one I might choose
Of all our electric friends—
A washer 'twould be—
For it would bring joy without end.

MRS. H. F. SANDER,
R. 4, Box 50, Reedsburg, Wis.

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The LYON ELECTRIC COMPANY manufacture electric poultry equipment exclusively. Long, practical experience in the highly developed California rural electric field enables us to furnish quality devices at reasonable prices. The LYON line includes: Brooders—Incubators — Egg Testers — Burglar, Temperature and Power-off Alarms — Heating Elements—Thermostatic Supplies—Time Switches—Wiring Supplies. Write for catalog today. LYON ELECTRIC COMPANY, 2075 Moore Street, San Diego, California.